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# COMMISSION ACTION ON NUCLEAR SAFETY

# IN CENTRAL AND EASTERN EUROPE AND THE FORMER SOVIET UNION

CONTENTS

## 1 Budgetary commitments

To date the Commission has made the following budgetary commitments to nuclear safety (in ECU million):

| | TACIS | Phare | Total |
|---|---|---|---|
| 1990/91 | 54 | 20 | 74 |
| 1992 | 100[1] | 28 | 108 |
| Total | 154 | 48 | 202 |

(1) including the Community's ECU 20m contribution to the International Science and Technology Centre in Moscow and ECU 20m to be carried over to the 1993 budget.

The 1990, 1991 and 1992 programmes therefore **total some ECU 200 million.** Moreover the Commission's 1993 budget plans, if approved, will bring its total contribution to improving nuclear safety over the three years 1991 to 1993 to ECU 325 million, or almost **USD 400 million.** This accounts for almost 60% of the USD 700 million total recommended to meet urgent needs by the G7 working group prior to the Munich summit.

## 2 Status report on Phare and TACIS 1991 programmes

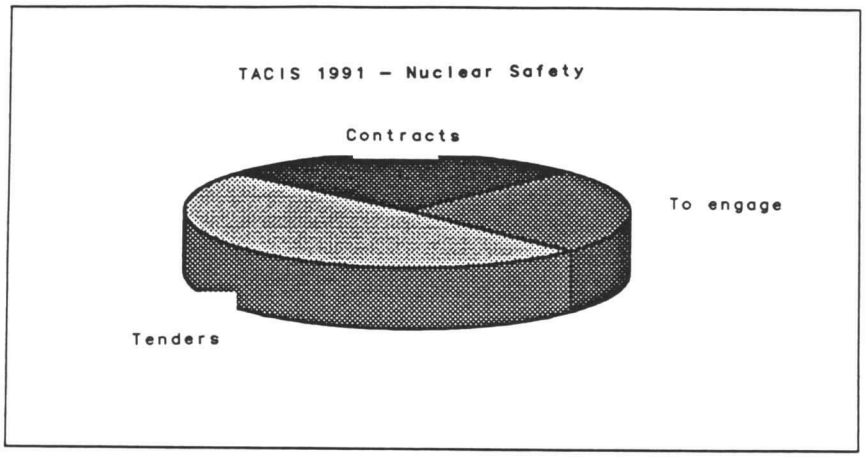
2(a) <u>TACIS programme 1991</u>

The TACIS 1991 programme (ECU 53 million) consisted of 35 projects, mainly generic safety studies, i.e. covering specific types of reactors. Given that the Soviets were reluctant at the time to submit to too much Western interference with their nuclear programme, no on-site assistance was planned as such in 1991. However, generic studies themselves are generally based on analyses of particular sites followed by extrapolation of the evidence to similar reactors. The majority of the studies, in practice, are and will continue to be conducted in Russia.

The table below gives a breakdown of the studies by reactor type and the type of organization helped:

| | Safety authorities | Operators |
|---|---|---|
| RBMK | 4 | 4.6 |
| VVER 230 | 5 | 22.8 |
| VVER 213/1000 | 1 | - |
| All types | 3.2 | 7.6+6.8 (training) |
| Total[1] | 13.2 | 41.8 |

By the end of November, the contracts signed and tenders launched totalled some ECU 41 million, mainly for studies on improving the safety of VVER 230 and RBMK reactors.




**To date, therefore, around 75% of the 1991 programme is under way.**

By mid-December around 90% of the programme will have been started.

1 The combined total is estimated to be some ECU 55 million, but the actual budget is ECU 54 million. The tender procedures have not all been completed yet, which should allow the programme to stay within budget.

2(b) PHARE programmes 1990/1991

Unlike the TACIS 1991 programme, which mainly covered generic studies (the reactors were all Soviet-designed), the Phare programmes for 1990 and 1991 focused mainly on on-site assistance.

| | Safety authorities | Operators |
|---|---|---|
| Kozloduy, Bulgaria (VVER 230) | 1 | 11.7 |
| Bohunice, Czech. (VVER 230 & 213) | 0.5 | 4 |
| Temelin, Czechoslovakia (VVER 1000) | - | 1 |
| All reactors, Czechoslovakia | - | 1.5 |
| Total | **1.5** | **18.7** |

2(b)(i) - Kozloduy

For 1991, the EC financed an emergency programme on the Kozloduy power station (VVER 230 reactors), helped by the World Association of Nuclear Operators, worth around ECU 12 million.

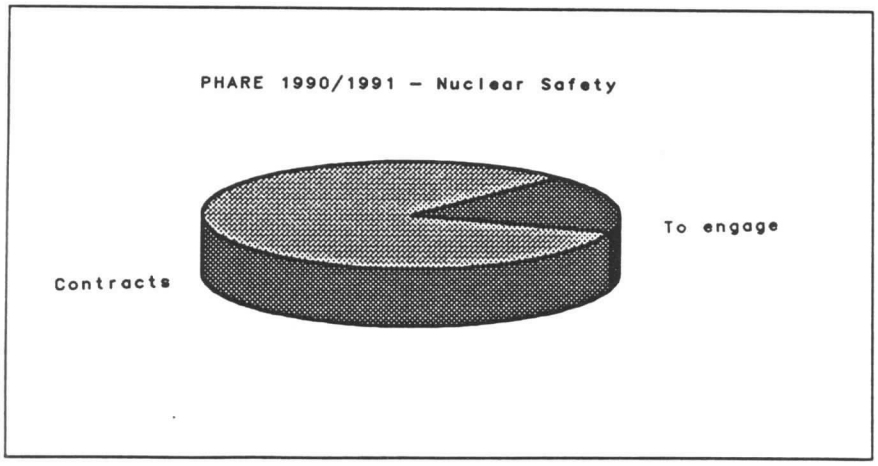
A consortium of technical support organizations from Community safety authorities contributed its expertise to a review of the power station's safety. The programme was extended to help the safety authorities.

2(b)(ii) - Bohunice and Temelin

Operations at Bohunice, which has both VVER 230 and VVER 213 units, focused on improving the safety of the emergency cooling and confinement systems for the VVER 230 reactors.

At Temelin, which has the more modern VVER 1000 reactors, assistance was targeted on control systems and instrumentation.

Training was arranged for the Czechoslovak safety authorities.




**To date, over 80% of the 1990/1991 programmes have therefore been committed.**

## 3 Phare and TACIS programmes 1992

### 3(a) TACIS programme 1992

The TACIS 1992 programmes are divided as follows:

| TACIS Nuclear Safety Programme 1992 | (ECU million) |
|---|---|
| International Science and Technology Centre | 20 |
| Safety of nuclear power plants (1992 programme for Russia and Ukraine) | 80 |

The programme takes account of the priorities set by G7 and the setting up of a Master Plan with the aid of the Twinning Programme Engineering Group (TPEG), a consortium of major Community utilities, and so comprises four parts:

| Safety of Nuclear Power Plants | (ECU million) |
|---|---|
| 1 Operational safety (on-site assistance) | 38 |
| 2 Design safety (generic studies) | 20 |
| 3 Assistance to safety authorities | 10 |
| 4 Master plan | 10 |
| (5 Programme management | 2) |
| **Total** | **80** |

### 3(a)(i) On-site assistance

Following missions by the Commission to Moscow and Kiev, the Russians and Ukrainians agreed for the first time to on-site assistance as recommended by the G7.

The funds for on-site assistance will be fully committed from the 1992 budget to allow detailed talks with Community operators and devise a satisfactory method of releasing a number of their experts for work at Russian and Ukrainian plants.

It is hoped that experts will be in place at three or four sites by the second quarter of 1993, not counting the various assignments financed as part of generic studies under the 1991 and 1992 programmes.

On-site assistance will cover two things:

(a) the human factor and man-machine interface (operational procedures, training, etc.)

(b) improving safety equipment (inspection and control, supply of basic equipment).

**3(a)(ii) Generic safety studies**

RBMK

No studies planned beyond those of the 1991 programme (ECU 8 million)

VVER 230

ECU 3 million (in addition to the ECU 23 million allocated in 1991).

VVER 213 and 1000

ECU 9 million earmarked for preparing financing of major safety improvements in conjunction with international lenders (EBRD, EIB, and World Bank). This is in addition to the ECU 5 million committed under Phare in 1992 and ECU 1 million committed under TACIS in 1991.

Civilian fuel cycle operations

ECU 8 million - relatively little is yet known about this sector.

**3(a)(iii) Assistance to safety authorities**

ECU 10 million has been budgeted (split equally between Russia and Ukraine) to help establish safety authorities and technical support organizations.

**3(a)(iv) Master Plan**

The Master Plan covers:

(a) working out an overall strategy for planning, building, running and decommissioning power plants, for and with the Russian and Ukrainian authorities;
(b) defining Community assistance in the medium term;
(c) additionally (after taking of stock of current work) carrying out studies to aid the overall policy review required by the Master Plan. This will view the plants' operation in the context of the nuclear chain, from mineral extraction through fuel processing to waste management, and reconsider nuclear generation of electricity compared with alternative energy sources via studies of input costs, prices and environmental impact.

The Russians and Ukrainians have approved the final text of the 1992 programme and in particular have accepted the principle of on-site assistance, despite all the potential problems it posed.

The advantage of the 1992 programme, in relation to the G7 document, is that thanks to its clear work programme, the Commission succeeded in **getting the Russian and Ukrainian authorities to accept the G7 recommendations on putting Western experts on-site.** The proposal was presented to the management committee on 30 November and the Member States unanimously approved it.

3(b) Phare 1992

The nuclear safety programmes for the Phare countries are as follows:

| Phare Nuclear Safety Programme 1992 | (ECU million) |
|---|---|
| Regional programme | 20 |
| Bulgarian national programmes | 8.3 |

The main budget headings by sector demonstrate the clear priority given to on-site assistance and an increased support for safety authorities:

Phare Nuclear Safety Programme 1992

| | |
|---|---|
| 1 Operational safety (on-site assistance) | 15.3 |
| 2 Design safety (generic studies) | 5 |
| 3 Assistance to safety authorities | 6 |
| 4 Regional waste management policy | 2 |
| Total | 28.3 |

3(b)(i) On-site assistance

On-site assistance will continue at Kozloduy (which has the VVER 230 and VVER 1000), accounting for around ECU 15 million. It has also begun at Ignalina in Lithuania (RBMK), in relation to training for operators.

3(b)(ii) Generic safety studies

Generic safety studies costing ECU 5 million will be started, coordinated with TACIS, for the most recent reactors (the VVER 213 and VVER 1000), since TACIS is financing the safety improvements to the VVER 230.

3(b)(iii) Assistance to safety authorities

Particular attention will be paid in 1992 to safety authorities, who will receive ECU 6 million.

## 4 Conclusion

The key features of Commission action to improve the safety of civil nuclear power installations in Central and Eastern Europe and the former Soviet Union have been:

- the speed of Commission measures to tackle all aspects of safety problems (on-site assistance, generic studies of reactor types, assistance to safety authorities);

- the size of the financial commitment, with the Commission planning to commit around USD 400 million altogether between 1991 and 1993 under the Phare and TACIS programmes, assuming its current budget proposals are accepted. This represents around 60% of total of USD 700 million recommended for urgent needs by the G7 working group prior to the Munich summit;

- the increasing stress on on-site assistance to back up generic studies. Following operations in Bulgaria and Lithuania, in 1993 the Commission will be the first to deploy on-site experts on a permanent, large-scale basis in Russia and the Ukraine.